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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/816,546

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Srikanth Krishnamurthy

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EXAMINER

AJIBADE AKONAI, OLUMIDE

ART UNIT

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2617

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/816,546	<b>Applicant(s)</b> KRISHNAMURTHY ET AL.	
	<b>Examiner</b> OLUMIDE T. AJIBADE AKONAI	<b>Art Unit</b> 2617	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 17 February 2009.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-39 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 16-27 is/are allowed.
- 6) ☒ Claim(s) 1,6,7,10,13,28-30, 33-36 and 39 is/are rejected.
- 7) ☒ Claim(s) 2-5,8,9,11,12,14,15,31,32,37 and 38 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

### DETAILED ACTION

1. The declaration filed on February 17, 2009 under 37 CFR 1.131 is sufficient to overcome the Elbatt et al reference.

### *Claim Objections*

2. Claims 1, 10, and 28 are objected to because of the following informalities:  
Regarding claim 1, the word "covey", on line 5, should be cancelled and replaced with "convey". Regarding claim 10, the word "covey", on line 5, should be cancelled and replaced with "convey". Regarding claims 3, 11, 17, and 24, the word "ID", on line 5, should be cancelled and replaced with "identifier". Appropriate correction is required.

Claim 28 recites the limitation "the cluster" on line 6. There is insufficient antecedent basis for this limitation in the claim.

### *Claim Rejections - 35 USC § 102*

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1, 6, 7, 10, 13, 28-30, 33-36, and 39 are rejected under 35 U.S.C. 102(b) as being anticipated by **Halpern 4,613,990**.

Regarding **claim 1**, Halpern discloses a wireless communication network comprising: a set of n nodes (first and second stations 10 and 11, see fig. 1, col. 2, lines 36-48), where at least one of the n nodes comprises: an antenna element for transmitting and receiving a wireless signal (see col. 5, lines 44-49); a detector element

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configured to determine a minimum transmittance power required to convey data to a cluster of nodes, the cluster comprising  $N$  nodes of the set of  $n$  nodes, wherein  $2 \leq N < n - 1$  (computing an appropriate power level for the transmitter at the cell site to transmit signals to a subscriber unit, see col. 8, lines 23-33); and a transmit power adjustment element, operatively interfaced with the detector element, the transmit power adjustment element configured to provide the minimum transmittance power to the antenna element (computing an appropriate power level for the transmitter at the cell site to transmit signals to a subscriber unit, and transmitting data to the subscriber unit at the computed power level, see col. 8, lines 23-33).

Regarding **claims 6, 33 and 39** as applied to claims 1, 28, and 39 Halpern further discloses wherein the wireless communication network is an ad-hoc low-mobility network (see fig. 1, col. 2, lines 36-48).

Regarding **claims 7, 13, 29, 30, 35, and 36** as applied to claims 1, 10, 28, and 34, Halpern further discloses wherein the detector element dynamically and periodically updates the minimum transmittance power required to convey data to the  $N$  nodes (see col. 9, lines 16-34).

Regarding **claim 10**, Halpern discloses a wireless communication device for use in a wireless communication network (cell site 10, see figs. 1 and 2, col. 2, lines 40-41) comprising: an antenna element for transmitting and receiving a wireless signal (see col. 5, lines 44-49); a detector element configured to determine a minimum transmittance power required to convey data to a cluster of nodes, the cluster comprising  $N$  nodes of a set of  $n$  nodes, wherein  $2 \leq N < n - 1$  (computing an appropriate

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power level for the transmitter at the cell site to transmit signals to a subscriber unit, see col. 8, lines 23-33); and a transmit power adjustment element, operatively interfaced with the detector element, the transmit power adjustment element configured to provide the minimum transmittance power to the antenna element (computing an appropriate power level for the transmitter at the cell site to transmit signals to a subscriber unit, and transmitting data to the subscriber unit at the computed power level, see col. 8, lines 23-33).

Regarding **claim 28**, Halpern discloses a method for improving multi-hop network data throughput in wireless ad hoc networks by optimizing transmitter output power, the wireless ad hoc network having  $n$  nodes, the method comprising acts of: receiving a plurality of signals from different wireless nodes in the wireless ad hoc network wherein at least one received signal has a known transmittance power (see col. 2, lines 36-48, col. 5, lines 44-49, and col. 6, lines, and col. 8, lines 23-33); calculating a degree of signal attenuation for at least one node in the cluster (computing an appropriate power level for the transmitter at the cell site to transmit signals to a subscriber unit, see col. 8, lines 23-33); and utilizing the determined degree of signal attenuation and the known transmittance powers to calculate a near optimal transmittance power, whereby a cluster of  $N$  neighbors is determined, wherein  $2 \leq N < n - 1$  (computing an appropriate power level for the transmitter at the cell site to transmit signals to a subscriber unit, and transmitting data to the subscriber unit at the computed power level, see col. 8, lines 23-33).

Regarding **claim 34**, Halpern discloses a method of optimizing power consumption in a network, the network having a first node (communication unit 11, see fig. 1, col. 2, lines 44-48) and a second node (cell site 10, see figs. 1 and 2, col. 2, lines 40-41), the method comprising steps of: receiving a beacon signal from the first node at a known transmit power (cell site 11 receiving RSSI signals from the mobile stations 11, see col. 5, lines 44-49, col. 6, lines 7-14, and col. 8, lines 23-33); measuring a received power level of the beacon signal at the second node (cell site 11 measuring RSSI signals received from the mobile stations 11, see col. 5, lines 44-49, col. 6, lines 7-28); calculating a optimum transmit power from the second node to the first node based upon the known transmit power and the received power level of the beacon (computing an appropriate power level for the transmitter at the cell site to transmit signals to a subscriber unit, see col. 8, lines 23-33); and utilizing the optimum transmit power when sending data from the second node to the first node (computing an appropriate power level for the transmitter at the cell site to transmit signals to a subscriber unit, and transmitting data to the subscriber unit at the computed power level, see col. 8, lines 23-33).

***Allowable Subject Matter***

5. Claims 16-27 are allowed.

The following is an examiner's statement of reasons for allowance: Regarding **claim 16**, Halpern 4,613,990 discloses a wireless communication network comprising: a set of n nodes, at least one node comprising: a detector element configured to determine a minimum transmittance power required to convey data to a node within the

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cluster of nodes; and a transmit power adjustment element operatively interfaced with the detector element, the transmit power adjustment element configured to provide the minimum transmittance power to an antenna element.

The instant invention discloses a set of  $n$  nodes, the set comprising a cluster of  $N$  nodes where  $2 \leq N < n - 1$ , a first node outside the cluster, and a second node inside the cluster, wherein at least one node in the cluster of  $N$  nodes communicates directly with the other  $N-1$  nodes in its cluster, and the first node communicates with the second node via multiple hops. The above novel features in combination with other limitations of the claim are neither taught, suggested, nor made obvious by Halpern or any other prior art of record. Claims 17-23 are allowable based on their being dependent on claim 16.

Regarding **claim 24**, Halpern 4,613,990 discloses a power-controlled wireless communication device for use in a network, the network having  $n$  nodes, said power-controlled wireless communication device comprising: an antenna element for radiating and detecting signals, the antenna element configured to receive a signal from another wireless communication device; a detector element configured to determine a received power level of the received signal from the other wireless communication device, the other wireless communication device transmitting at a known transmit power level.

The instant invention discloses, the other wireless communication device belonging to a cluster of nodes, the cluster having  $N$  nodes, where  $2 \leq N < n - 1$ ; and a connectivity table for storing an ID of the other wireless communication device and an associated transmit power level associated with the other wireless communication device, the associated transmit power level being calculated from the known transmit

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power level and the received power level. The above novel features in combination with the other limitations of the claim are neither taught, suggested, nor made obvious by Halpern or any other prior art of record. Claims 25-27 are allowable based on their being dependent on claim 24.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Claims 2-5, 8, 9, 11, 12, 14, 15, 31, 32, and 37-38 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

### ***Conclusion***

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Cao et al 6,292,471 discloses power control for mobile wireless communication system.

Rom 5,450,616 discloses a method and apparatus for power control in a wireless LAN.

Morris et al 5,003,619 discloses a method and apparatus for adjusting the power of a transmitter.



Hulbert 5,574,974 discloses mobile radio system having power level control signaling.

Ramanathan 6,418,299 discloses self-organizing mobile wireless station network.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to OLUMIDE T. AJIBADE AKONAI whose telephone number is (571)272-6496. The examiner can normally be reached on M-F, 8.30p-5p.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Charles Appiah can be reached on 571-272-7904. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

OA

/Charles N. Appiah/  
Supervisory Patent Examiner, Art Unit 2617